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ABSTRACT

Data from a 10 percent sample of fifth-twelfth grade students indicate that in four predominantly rural counties of Kentucky, children are exposed to smoking before fifth grade and to drinking by seventh grade. The Health Education/Risk Reduction Grant Program was implemented over a 3-year period in the four county school systems in an attempt to intervene in the knowledge, attitudes, and behaviors of the program participants. Each program (smoking and alcohol) consisted of 6 hours of instruction over a 3-week period, twice per week, or over a 6-week period, once per week. The smoking program was presented to 1,400 fifth and sixth graders, while the alcohol program was presented to 1,350 seventh and eighth graders. To evaluate the programs' instruction, objectives, and evaluation instruments, pre- and post- questionnaires, assessing the students' knowledge, attitudes, and behaviors, were completed by the participants. An analysis of questionnaire responses showed that for the alcohol program, seven of the nine program objectives were met, with students demonstrating a statistically significant change in knowledge on 17 of 18 items, in attitude on 11 of 18 items, and in behavior on 4 of 11 items. For the smoking program, 11 of 12 program objectives were met, with students demonstrating a statistically significant change in knowledge on 20 of 31 items, and in attitude and behavior on 20 of 30 items. (The statement of program objectives, the evaluation questionnaire, and questionnaire data are included in the report). (BL)

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SMOKING AND DRINKING: EVALUATION OF AN INTERVENTION PROGRAM

A Paper Presented at the
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INTRODUCTION

The promotion of good health among adolescents is important and is the target of several federal government agencies as well as laws, policies, goals, and objectives at every state and local level. Adolescence is a time of experimentation and initiation into adult behavior patterns. There is an acute need for prevention efforts and health promotion programs regarding the use of alcohol and its consequences and smoking and its effects on health.

Federal funds were made available to the Kentucky Bureau for Health Services to fund a Health Education/Risk Reduction Grant Program through the Kentucky Cumberland Valley District Health Department for a four-county program. This program was conducted (and is continuing) in four predominately rural counties in Southeast Kentucky. They are Jackson, Clay, Knox, and Whitley Counties. This program was to focus on smoking and the consumption of alcohol.

In December of 1980 baseline data were collected from a ten percent (10%) sample of fifth through twelfth grade students in the four counties. The data focused on habits and attitudes toward drinking and smoking. These data indicated when students first experiment with smoking, when they start smoking, quantity and frequency of smoking, attitudes toward smoking, knowledge of possible health consequences of smoking, and reasons young people smoke or choose not to smoke. Similar data were gathered regarding drinking of alcoholic beverages.

These data indicated that students in the four counties are exposed to smoking early and are likely to at least experiment with smoking even prior to the 5th grade. It would appear that programs such as this one might be most successful if they are aimed at 5th and 6th graders before smoking habits and

attitudes are established and while they may be particularly receptive to factual knowledge about the effects of smoking on health.

Students are exposed to alcoholic beverages and appear to have the greatest temptations or peer pressure to at least experiment with drinking at the junior high school level (grades 7 - 9). The availability of alcoholic beverages in Knox and Whitley Counties may account for a greater incidence of drinking in these counties than in Jackson and Clay Counties. More students are likely to try alcoholic beverages, to drink more frequently, and to drink more at one time (or get drunk) as they get older throughout the high school years. Students may be particularly receptive to factual knowledge about the effects of alcohol on the body and the consequences of drink in the junior high period or grades 7 - 9. Therefore, programs like this one should be aimed at these grades.

THE PROGRAM

The first year (1980-81) of the Health Education/Risk Reduction Grant Program was used to identify and or develop suitable educational programs for use in the schools on both smoking and alcohol. The author was employed to assist with the development of appropriate goals and objectives, and to serve as the evaluation consultant. Since this was not a research project, per se, evaluation of the effectiveness of the short-term intervention programs was limited to pragmatic and "common-sense" methods. They were of two types: (1) evaluation of agreed-upon objectives of the programs; (2) a pre and post assessment (with appropriate controls for comparison) of the knowledge, attitudes and behavior of the participants.

The second year (1981-82) was the first full year of implementation of the two programs on a wide scale in the school systems in the four counties. The

intervention programs were refined and modified based upon the feedback from the students, staff assessments, and the formal evaluation. The third year (1982-83) was essentially a continuation of the two programs as offered in the second year with further refinements in the programs and the formal evaluation procedures. Each program (smoking and alcohol) consisted of six hours, or lessons, presented by a staff person, representing the grant project, in the respective schools and grades over a three week period (twice a week) or over a six week period (once a week). The smoking program was presented to fifth and sixth graders. The alcohol program was presented to seventh and eighth graders.

EVALUATION OF THE PROGRAM

During the 1982-83 school year, with the cooperation of the school districts, superintendents, principals, and teachers in the four county area, the program was conducted with approximately 1,400 5th and 6th graders in the smoking program and approximately 1,350 7th and 8th graders in the alcohol program. In order to evaluate the program in a more specific manner and to ascertain the degree to which the objectives were met, questionnaires were developed and used a pre and post assessment

instruments in each of the two programs. In order to control for the many variables that might account for any changes noted from the pre to post assessments, assessment instruments were administered to comparable classes in 1981-82 in the same schools without the students receiving instruction or otherwise being involved in the project during this period. There was no difference in the response of the pre assessment results and the post assessment results of the control groups. Therefore, for the 1982-83 program, the evaluation focuses on a comparison of the pre and post assessments of the students receiving the respective programs.

The prior use of the pre and post assessments of comparable control groups indicated that there were no significant changes in knowledge, attitudes, or likely behavior for the control groups when no instruction was given for either the smoking or alcohol programs. Further, the data indicated that on practically all comparisons there were no significant differences between the indicated knowledge, attitudes, or likely behavior of the post assessment control groups and the pre assessment groups to receive the respective instruction. Therefore, the primary focus of the evaluation deals with the frequencies of response indicating how many or what proportion of students have certain knowledge or indicate a given attitude or behavior and if there was significant changes in knowledge, attitudes, or indicated behaviors from the pre to the post assessments. The computer services of Eastern Kentucky University and qualified personnel were used in analyzing the data with crosstabulation frequency distributions and Chi square statistics using the Statistical Package for the Social Sciences (SPSS). This provided adequate data for determining whether objectives were met and was used to gain greater knowledge of of the effects of the program's and students' responses. The results of the 1982-83 program were used to evaluate the programs of instruction and revise them for the 1983-84 year, to revise and improve the evaluation instruments, and to identify appropriate objectives that seemed feasible for the 1983-84 year.

Objectives	Results of Post Assessment
A. Eighty percent (80%) of the students participating in the project will be able to identify:	
1. Fatal alcohol syndrome as the most serious possible consequence of drinking alcoholic beverages while pregnant.	Topic was covered in instruction. 71% know on post assessment. See number 14.
2. The legal definition of intoxication in Kentucky.	Topic was covered in instruction. 75% know on post assessment. See number 7.
3. The amount of alcohol in various types of alcoholic beverages.	Objective met. See number 12.
4. Three effects of alcohol on behavior.	Objective met. See numbers 4, 13, 17.
5. Two common myths about alcohol use.	Objective met. See numbers 3, 4, 22, 24, 26, 30.
6. Three warning signals of a possible problem drinker.	Objective met. See numbers 6, 11, 27.
7. Responsible and irresponsible decisions related to drinking.	Objective met. See numbers 18, 29, 41, 42.
8. Two reasons why people drink and two reasons why they do not.	Objective met. See numbers 10, 18, 21, 23, 27, 31, 33, 36, 43.
B. Fifty percent (50%) of those who state that they drink will indicate they will not drive or ride with a person drinking alcoholic beverages.	Objective met. See number 42. (84% will not ride in a car driven by a person drinking.) See number 45. (78% will not drive a car after drinking alcoholic beverages.)

The assessment instrument was closely coordinated with the objectives and all were met as stated with the exception of number 1 (71% know) and number 2 (75% know).

The student responses to the pre and post assessments show the following. All percentages are rounded to the nearest whole number. Statistical significance is indicated at the .05 level and .01 level. This represents a change from the pre to

post assessment likely to happen by chance alone only five percent (or one percent) of the time and therefore all such statistically significant changes are attributed to the effect or impact of the alcohol instructional program.

KNOWLEDGE (Information) about alcohol

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. Change at .05 level	.01 level
1. Alcohol is a drug. (true)	84	96		Yes
2. Methyl alcohol is just another name for ethyl alcohol. (false)	36	80		Yes
3. Drinking beer will not make a person drunk. (false)	89	87	No	
4. Most of the time alcohol slows a person down. (true)	79	82		Yes
5. Drinking "a couple of beers" effects a person's judgment and decision making skills. (true)	72	81		Yes
6. Drinking too much alcohol at one time can cause death. (true)	66	87		Yes
7. A person with a blood alcohol concentration of .10% is considered legally intoxicated in Kentucky. (true)	37	75		Yes
8. Beer, wine and hard liquor are all alcohol but made differently. (true)	85	88		Yes
9. Drinking alcohol and taking pills at the same time can be dangerous. (true)	96	98		Yes
10. Several million dollars per year are spent on the advertising of alcoholic drinks. (true)	78	90		Yes
11. Someone who drinks alone, or drinks more frequently than others, could be a problem drinker. (true)	90	93		Yes
12. A 1-ounce shotglass of hard liquor (like whiskey) has the same amount of absolute alcohol as a 12-ounce can of beer. (true)	33	80		Yes

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. Change at .05 level	Signif. Change at .01 level
13. If two people drink the same number of beers, they may each behave differently. (true)	88	91		Yes
14. Fetal alcohol syndrome is the most serious possible consequence of drinking alcoholic beverages while pregnant. (true)	50	71		Yes
15. Alcoholic beverages can be fattening. (true)	60	80		Yes
16. The only part of a person's body that can be damaged by alcohol is the "liver". (false)	77	86		Yes
17. To have a "black-out" means that people cannot remember their behavior during certain parts of their drinking. (true)	81	90		Yes
18. A person who drinks to escape from work, home or school worries could have a drinking problem. (true)	88	90		Yes
ATTITUDE				
19. The main reason that people drink alcohol is to feel good. (agree?)	56	65		Yes
20. Most people can drink a six-pack of beer without feeling any effect from it. (disagree)	51	55		Yes
21. Advertisements in magazines or on the radio or TV could cause a person to want to drink alcohol. (agree)	78	86		Yes
22. Alcoholics are really just "bums". (disagree)	65	71		Yes
23. If parents drink, their children will be more likely to drink. (agree)	76	78		Yes
24. Women who drink alcohol can become alcoholic. (agree)	89	92		Yes

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. .05 level	Change at .01 level
25. Drinking alcohol hurts ONLY the person who drinks it. (disagree)	72	72	No	
26. If people just drink beer, they won't become alcoholics. (disagree)	85	86	No	
27. Alcoholics drink alcohol because they are addicted to it. (agree)	75	82		Yes
28. People are not "alcoholic" just because they drink alcohol. (agree)	59	65		Yes
29. To "abuse" alcohol means that people drink so much that they get drunk. (agree)	75	83		Yes
30. Alcoholism is a disease. (agree)	52	79		Yes
31. One of the reasons that people drink alcohol is to try to forget their problems. (agree)	92	93	No	
32. People who drink alcoholic beverages have a responsibility not to drive while drinking. (agree)	90	90	No	
33. Drinking alcoholic beverages could make me popular. (disagree)	87	86	No	
34. To drink alcohol and drive would be a dangerous thing to do. (agree)	96	95	No	
35. People choose not to drink because of religious beliefs. (agree)	49	67		Yes
36. People choose not to drink because it is a hazard to their health. (agree)	87	88	No	
BEHAVIOR				
37. I could help friends sober up quickly by giving them black coffee and dousing their heads with cold water. (no)	16	38		Yes
38. The only way to tell if people are drunk is to smell their breath. (no)	89	88	No	

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. .05 level	Change at .01 level
39. Using only a little alcohol would hurt me. (yes)	47	52		Yes
(no)	36	38		Yes
40. I would be friends with people who drink. (yes)	30	35		Yes
41. It would be o.k. for me to use alcohol as long as I didn't get caught. (no)	92	92	No	
42. I would ride in a car driven by a person who was drinking. (no)	90	88	No	
43. If people were to offer me some alcohol I would try it just to keep their friendship. (no)	87	87	No	
44. Drinking alcohol is something that I would do as long as I "didn't go overboard" or get drunk. (no)	74	72	No	
45. I would drive a car after drinking alcoholic beverages. (no)	92	91	No	
46. I would be in a group that uses alcohol. (no)	83	82	No	
47. I sometimes drink alcoholic beverages. (yes)	21	24		

SUMMARY AND IMPLICATIONS

Approximately 24% of the 7th and 8th graders involved in the alcoholic program of instruction indicated "YES" to the question "I sometimes drink alcoholic beverages." An intervention program is obviously needed when such activity is inappropriate and illegal. Those who drink respond differently to some questions than those who do not drink. Examples are: "Drinking beer will not make a person drunk" (drinkers 13% true vs 9% for non-drinkers); "A person with a blood alcohol concentration of .10% is considered legally intoxicated in Kentucky" (drinkers 60% true vs 50% for non-drinkers); "Most people can drink a six-pack of beer without feeling any effect from it" (drinkers 47% true vs 34% for non-drinkers); "If people just drink beer they won't become alcoholics" (drinkers 12% agree vs 9% for non-drinkers); "Drinking alcoholic beverages could make me popular" (drinkers 16% agree vs 8% for non-drinkers); "Using only a little alcohol would hurt me" (drinkers 37% yes vs 52% for non-drinkers); "It would be O.K. for me to use alcohol as long as I didn't get caught" (drinkers 21% yes vs 3% for non-drinkers); "I would ride in a car driven by a person who was drinking" (drinkers 21% yes vs 3% for non-drinkers); "If people were to offer me some alcohol I would try it just to keep their friendship" (drinkers 22% yes vs 4$ for non-drinkers); "I would drive a car after drinking alcoholic beverages" (drinkers 17% yes vs 2% for non-drinkers); etc.

There was a significant change in the desired direction for a majority of the areas assessed from the pre to the post assessment. Most of the objectives established for the program were met. Therefore this program can be recommended for use in any school system at these grade levels. Measurable positive results can be expected.

Objectives	Results of Post Assessment
A. Eighty percent (80%) of the students participating in the project will be able to identify:	
1. Ten reasons people smoke.	Objective met. See numbers 32, 37, 42, 46, 50, 54, 55, 56, 60
2. Four diseases associated with smoking.	Objective met. See numbers 1, 5, 8, 17, 21, 26
3. Four effects of smoking on the body.	Objective met. See numbers 4, 23, 27, 28, 47, 52, 61
4. Four possible effects of smoke on a non-smoker.	Objective met. See numbers 6, 13, 20, 67
5. Four effects of smoking on the unborn child.	Topic was covered in instruction #29 (74%), #30 (67%)
6. Five factors that influence decision making.	Objective met. See numbers 38, 39, 40, 41, 50, 60, 63, 66, 68, 70
7. Five ways to quit smoking.	Topic was covered in instruction. Objective not met. See numbers 3, 9, 15, 18, 19, 24, 25
8. Two ways that smoke affects the respiratory system.	Objective met. See Numbers 1, 8, 23, 27
9. Two ways that smoke affects the heart and circulatory system.	Objective met. See numbers 1, 17, 26
B. Of those students who indicate they now smoke:	
1. 20% will state they will quit within one year.	Objective not met. (9% Yes)
2. 50% will state they will smoke fewer cigarettes.	Objective not met. (10% Yes)
3. 25% will encourage their friends not to smoke	Objective not met. (16% Yes)

The student responses to the pre and post assessments show the following. All percentages are rounded to the nearest whole number. Statistical significance is indicated at the .05 level and .01 level. This represents a change from the pre to post assessment likely to happen by chance alone only five percent (or one percent) of the time and therefore all such statistically significant changes are attributed to the effect or impact of the smoking instructional program.

KNOWLEDGE (Information) about smoking

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. Change at .05 level	Signif. Change at .01 level
1. Many more smokers than non-smokers die from heart attack and lung cancer. (true)	94	92	No	
2. Emphysema is a disease of the heart. (false)	14	17	No	
3. A person might quit smoking by getting friends or relatives to quit with them. (true)	78	84		Yes
4. A person with emphysema has trouble breathing. (true)	59	82		Yes
5. Bronchitis is a serious lung disease which causes inflammation of the lining of the bronchial tubes. (true)	61	72		Yes
6. Air pollution caused by cigarette smoking hurts only the smoker. (false)	74	77	No	
7. Nicotine is a poison found in cigarettes. (true)	62	85		Yes
8. Cigarette smoking causes at least 80% of lung cancer. (true)	84	87	No	
9. It is easier to stop smoking by smoking only half of the cigarette. (true?)	27	49		Yes
10. Smoking leaves a bad taste in the smoker's mouth and a bad smell on his clothes. (true)	87	92		Yes

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. Change at .05 level	Signif. Change at .01 level
11. Carbon monoxide from smoking cigarettes has no effect on the amount of oxygen in the blood. (false)	53	57		Yes
12. Cilia make up a cleaning device to keep the lungs free of foreign material. (true)	24	53		Yes
13. Cigarette smoke pollutes the air we breathe. (true)	91	92	No	
14. The cilia can be paralyzed by cigarette smoke. (true)	26	50		Yes
15. A person might quit smoking cigarettes by not carrying matches or a lighter. (true)	46	63		Yes
16. One-third of all accidental fires are caused by careless smokers. (true)	91	92	No	
17. Smoking makes the heart have to work harder. (true)	80	92		Yes
18. A person might stop smoking by not smoking immediately after eating. (true)	27	46		Yes
19. It is much easier to stop smoking than to start. (false)	72	71	No	
20. Cigarette smoke can irritate the eyes of a non-smoker. (true)	94	94	No	
21. Cigarette smoking shortens your breath. (true)	75	90		Yes
22. The number of teenage girls who smoke has decreased in the past few years. (false)	27	25	No	
23. Tar is a mixture in cigarettes that coats the lungs and slows down their normal action. (true)	61	85		Yes
24. A person may quit smoking by gradually reducing the number of cigarettes smoked each day. (true)	75	73	No	

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. Change at .05 level	Signif. Change at .01 level
25. A person may quit smoking if he doesn't carry cigarettes with him. (true)	54	63		Yes
26. There is no relationship between cigarette smoking and heart disease. (false)	69	73	No	
27. The main sign of emphysema is shortness of breath. (true)	51	72		Yes
28. Smokers often have an annoying chronic cough. (true)	83	89		Yes
29. Women who smoke during pregnancy have more premature children. (true)	58	74		Yes
30. Women who smoke during pregnancy have a higher number of stillbirths. (true)	40	67		Yes
31. Women who smoke during pregnancy give birth to children who weigh more than average. (false)	32	39		Yes
ATTITUDE AND BEHAVIOR				
32. Teenagers who smoke cigarettes to be different are more likely to be trouble-makers than teenagers who don't smoke. (agree)	30	86		Yes
33. Making something of my life is important to me. (agree)	91	93	No	
34. A person who smokes is more of a follower than one who doesn't smoke. (agree)	46	62		Yes
35. Adults try to stop teenagers from smoking just to show their power. (disagree)	64	60	No	
36. I use my own set of values to decide what I will or will not do. (agree)	66	72		Yes
37. Kids who smoke are show-offs. (agree)	79	83		Yes
38. I don't want to get hooked on anything, including cigarettes. (agree)	88	85	No	
39. If you don't smoke cigarettes, other teenagers put you down. (agree)	67	79		Yes

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. Change at .05 level	Signif. Change at .01 level
40. Teenage smokers think they are grown-up but they really aren't. (agree)	92	89	(Yes↓)	
41. Teenage smokers think they look cool, but they really don't. (agree)	93	91	No	
42. Advertisements in newspapers and magazines might cause a person to smoke. (agree)	57	79		Yes
43. A teenager should be able to do the things he wants to do when he wants to do them. (disagree)	70	67	No	
44. I do not want to be just one of the crowd. (agree)	68	70	No	
45. Cigarette smoke smells bad. (agree)	93	90	No	
46. Smoking cigarettes can help you enjoy life more. (disagree)	91	85	(Yes↓)	
47. Cigarette smoking is harmful only if a person inhales. (disagree)	50	53	No	
48. Even if cigarettes don't kill you, they can cut down on what you might get out of life. (agree)	88	88	No	
49. There is no danger in smoking cigars or pipes. (disagree)	84	78	(Yes↓)	
50. I believe the health information about smoking is true. (agree)	82	85	Yes	
51. Smoking cigarettes gives you a good feeling. (disagree)	83	74	(Yes↓)	
52. Cigarettes low in tar and nicotine can't harm your health. (disagree)	73	76		Yes
53. There's nothing wrong with smoking cigarettes as long as you don't smoke too many. (disagree)	75	72	No	
54. Smoking cigarettes seems to make good times even better. (disagree)	86	78	(Yes↓)	

Item	Pre Assmt. Perct.	Post Assmt. Perct.	Signif. Change at .05 level	Signif. Change at .01 level
BEHAVIOR				
55. Most boys start smoking cigarettes because their friends smoke. (agree)	89	88	No	
56. Most girls start smoking cigarettes to try to attract boys. (agree)	68	77		Yes
57. I am under pressure from my friends to smoke. (disagree)	41	48		Yes
58. People smoke cigarettes to help them think more clearly. (disagree?)	76	60	(Yes↓)	
59. It's okay for teenagers to experiment with cigarettes if they quit before it becomes a habit. (disagree?)	40	42	No	
60. Most boys start smoking cigarettes to try to become more popular. (agree)	81	80	No	
61. Cigarette smoking can harm the health of teenagers. (agree)	93	92	No	
62. Cigarette smokers should be kept apart from non-smokers in public places. (agree)	69	75		Yes
63. I prefer the company of girls who don't smoke. (agree)	82	82	No	
64. People who smoke seem to be more at ease with each other. (disagree?)	44	39	(Yes↓)	
65. Cigarette smoking should be forbidden inside public places. (agree)	73	75	No	
66. I prefer the company of boys who don't smoke. (agree)	78	80	No	
67. If I smoke around other people, I take away their right to breathe clean air. (agree)	100	100	No	
68. Teenagers who smoke regularly can quit for good. (agree)	84	86	No	
69. Girls start smoking to look older. (agree)	33	40		Yes
70. It is extremely difficult for an habitual smoker to quit smoking. (agree)	76	79	Yes	

SUMMARY AND IMPLICATIONS

Approximately 13% of the 5th and 6th graders involved in the smoking program of instruction indicated "YES" on the post assessment to the question "Do you smoke." It is obvious that an intervention program is needed at these grade levels. It is also apparent that those who smoke respond differently to some questions than those who do not smoke. Examples are: "Teenagers who smoke regularly can quit for good" (smokers 77% agree vs 88% non-smokers); "I believe the health information about smoking is true" (smokers 79% agree vs non-smokers 85%); "There is nothing wrong with smoking cigarettes as long as you don't smoke too many" (smokers 25% agree vs 18% non-smokers); "Smoking cigarettes seems to make good times even better" (smokers 13% agree vs 8% non-smokers); "I don't want to get hooked on anything, including cigarettes" (smokers 78% agree vs 88% non-smokers); etc.

There was a significant change in the desired direction for a majority of the areas assessed from the pre to the post assessment. Most of the objectives established for the program were met. Therefore, this program can be recommended for use in any school system at these grade levels. Measurable positive results can be expected.